

- ☒ fossil energy
- ☐ environmental
- ☐ energy efficiency
- ☐ other

FETC RESEARCHERS PUBLISH CRITICAL REVIEW OF MERCURY MEASUREMENT AND CONTROL ACTIVITIES

States Impacted:

Alabama, Florida, Georgia,
Indiana, Illinois, Kentucky,
Michigan, Missouri, North
Carolina, Ohio, Pennsylvania,
Texas, and West Virginia

Benefit Areas:

Potential to Improve
Environmental Quality Using
Advanced Control Strategies
Having High Cost
Effectiveness

Participants:

Federal Energy Technology
Center, Electric Power
Research Institute

FETC Contact:

Thomas D. Brown*

Office: (412) 386-4691
E-Mail: brown@fetc.doe.gov

MAIL ADDRESS:

* U.S. Department of Energy
P.O. Box 10940
626 Cochran's Mill Road
Pittsburgh, PA 15236-0940

**U.S. Department of Energy
P.O. Box 880
3610 Collins Ferry Road
Morgantown, WV 26507-0880

WEBSITE:

www.fetc.doe.gov

Description

The Federal Energy Technology Center manages the largest funded research program in the U.S. that addresses mercury emissions generated by coal-fired electric utilities. Since the promulgation of the Clean Air Act Amendments (CAAA) of 1990, DOE has collaborated with various government and industrial organizations to develop a better understanding of mercury and other hazardous air pollutants (HAPS) or air toxics. In fact, DOE/FETC and its research partners have focused primarily on trace element research. The most significant of these efforts was an EPRI/FETC collaboration to sample and analyze the possible 189 HAPs listed in Title III of the CAAA, said to result from coal combustion and indicated by EPA to potentially impact ecosystems and human health. The combined effort resulted in comprehensive assessments of over 30 coal-fired power plant across the U.S. These were provided to the EPA in response to their congressionally mandated reports: the Mercury Study Report and the Study of Hazardous Air Pollutants Emissions from Electric Utility steam Generating Units - Final Report to Congress.

Goals

The goals of FETC's research program are three-fold: to develop a better understanding of mercury emissions; to determine the most effective methods of measuring these emissions; and if necessary, to design technologies that will control these emissions.

Tangible Benefits

National: FETC's program has led to numerous developments in the area of mercury research. Most notably, FETC has played a significant technical role in the decision as to whether or not mercury emissions from coal-fired boilers should be regulated. The analyses prepared by FETC were welcomed and incorporated by the EPA in drafting the Mercury Study Report. The FETC findings indicated the complex behavior of mercury emissions and control pathways. In addition, FETC has also been involved in helping EPA regarding the Toxic Release Inventory and the Information Collection Request for mercury concentration determination in various coal used by the utility industry, and for mercury flue gas speciation measurements. According to a sensitivity analysis, control options can significantly impact the diverse power plant population in the U.S. Two possible scenarios considered are: (1) to set a cap on emissions of 0.03 tons of mercury emitted per million tons of coal consumed; or (2) to reduce the amount of mercury contained in the mined coal by 90 percent. In either case, the control option would be highly dependent on the power plant's operating characteristics and design.

Regional: Potential costs and benefits are greatest for the South Atlantic and East North Central Census division. Total coal-fired power plant capacity for these regions is 70,650 MW and 81,415 MW, respectively. The combined impact of these two regions represents nearly 50 % of the total coal-fired power plant population. Waterways that are influenced by mercury emissions include vast areas in the Eastern United States — most notably being the Potomac Basin watershed and the Great Lakes.